Vertical Pivot Gate Operators

OPERATIONS AND MAINTENANCE MANUAL

Model No.:______________________

Serial No.: ______________________

B&B ARMR

Corporate Office & Tech Support:
5900 S. Lake Forest Drive
Suite 230
McKinney, TX 75070
Phone: (972) 385-7899
Toll Free: (800) 367-0387
Fax: (972) 385-9887
E-mail: info@bb-armr.com
techsupport@bb-armr.com
www.bb-armr.com
MADE IN THE USA



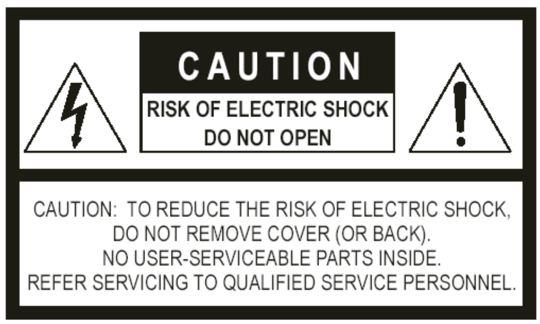
Your safety is extremely important to us. If you have any questions or are in doubt about any aspect of the equipment, please contact us.

Introduction

Welcome!

Congratulations on your purchase of a B&B ARMR Vertical Pivot (VP) gate operator. In addition to providing detailed operating instructions, this manual describes how to install, maintain, and troubleshoot your operator. If you require additional assistance with any aspect of installation or operation, please contact us.

Safety



SYMBOL MEANING:



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of non-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

Important Safety Information

TO REDUCE THE RISK OF SERIOUS INJURY OR DEATH, READ AND FOLLOW ALL INSTRUCTIONS PROVIDED IN THIS MANUAL.

1. Hydraulic slide gate operators are intended for vehicular use only. Pedestrians should use a separate walkthrough entrance designed for on-foot traffic.
2. Keep children away from gate movement area and off the gate operator. Never let children operate or play with gate controls.
3. Install all warning signs provided with the gate operator so that they are clearly visible from both sides of the gate.
4. It is the responsibility of the specifier, designer, purchaser, installer and end-user to ensure the gate system is properly configured for its intended application.
5. Use the emergency manual release only when the gate is not in motion.
6. Test gate operator and all related safety devices monthly. The gate must reverse or stop when a safety device is tripped. The gate must stop upon sensing a second sequential safety violation before reaching a limit switch. If the gate utilizes a transmitting device on a safety edge, check the battery on a regular basis to ensure proper operation. Failure to adjust and re-test the gate operator properly can increase the risk of injury.
7. This gate operator utilizes a pumping system which contains hydraulic fluid. Consult local EPA (Environmental Protection Agency) regulations for damming requirements (if any) around the base of the gate operator.
8. Service and maintenance of the gate operator should be performed on a routine basis by a qualified technician. Attempts to service the gate equipment by non-qualified personnel could result in serious injury and will void all applicable warranties.

SAVE THESE INSTRUCTIONS.

THIS MANUAL SHOULD BE LEFT WITH A RESPONSIBLE INDIVIDUAL AT THE INSTALLATION SITE AND KEPT IN A DESIGNATED LOCATION FOR MAINTENANCE OR TROUBLESHOOTING OPERATIONS

How to Contact Us

If you have any questions or experience any problems with your vehicle barrier—or if we can help you with any other facility security issues—please contact us directly at:

Corporate/Tech Support:
B&B ARMR
5900 S. Lake Forest Drive, Suite 230
McKinney, TX 75070 USA
Telephone: (972) 385-7899
Toll Free: (800) 367-0387
Fax: (972) 385-9887
E-mail: info@bb-armr.com
techsupport@bb-armr.com

Table of Contents

1. General Description

The B&B ARMR VP series gate operators are designed to reliably operate any style gate panel up to 24 feet long and 8 feet high, allowing for an additional 1 foot of barbed wire. Common applications include automatic operation of commercial and residential entry gates, condo and subdivision access control gates and airport security gates. The operator is durable under heavy use in both commercial and residential installations. The design incorporates a number of excellent features intended to improve safety and security, increase reliability and reduce maintenance.

Controls operate on safe and reliable 24VAC voltage (24VDC on Fail Safe and Battery Backup units). A transformer, completely prewired, is installed in each operator to step down the input voltage.

The operator actuates the gate by using a hydraulic cylinder, causing the gate panel to pivot upright on a sturdy pivot shaft, mounted on a series of pillow blocks. The gate panel is bolted to the frame which is welded to the pivot shaft, which allows for easy servicing or replacing of the gate panel should such an event become necessary.

Rotation direction (open or close) is determined by the hydraulic valve system, not by the direction of the electric motor rotation. This independence from electric motor rotation results in several advantages. Gate travel can be instantly reversed. And because this can be accomplished with changing the motor rotation, brakes are not required.

B&B's warranty reflects confidence in the commitment to the quality of the products. VP operators carry a 2 year factory warranty, the best available.

B&B ARMR is a subsidiary of B&B Roadway and Security Solutions. B&B was founded in 1926 and has built its reputation over the years on responsive customer service and the highest quality products. B&B is proud of its reputation and strives to continually renew it with each operator it manufactures.

2. Features

- Safe 24VAC controls standard (24VDC on Fail Safe and Battery Backup units)
- Low maintenance – no sprockets, chains, brakes, or springs to adjust
- Prewired PLC board with many built in features and plug in options, eliminates complex and confusing internal circuit wiring
- Wide range of control options, including but not limited to combinations of:

Remote pushbutton station(s)	Loop detector
Single button control	Auto exit
Obstruction detector	Emergency open
Autoclose timer	Radio control
Master/slave control	Warning light/buzzer

- Gate panel can be designed to match road gradient
- Complete easy reference wiring diagrams for all standard control options
- Built in adjustable maximum run timer
- Instant reverse capability during close cycle for safety and obstruction detection
- Inherent safety
- 115/208/230 single phase and 208/230/440 three phase units available
- Continuous duty capability
- Rigid steel channel pivot frame for easy gate panel mounting
- No chains to cut or pins to remove, increases security
- Pry resistance – hydraulic cylinder automatically locked when unit is de-energized
- Clearly illustrated installation, maintenance and troubleshooting instructions
- Bypass valve quick action release for manual operation
- Limited 2 year factory warranty

3. Models Available

VP
- Standard model
- Rotation speed: 90° to open in under 10 seconds
- Recommended gate opening: up to 24 feet long

“B” Models
- Battery Backup model
- Rotation speed: 90° to open in under 10 seconds
- Recommended gate opening: up to 24 feet long
- Maintains normal operation during power failures
- Primary power of 115 & 240VAC single phase only

Gate Panel Configuration
- Amplimesh
- Chain link
- Ornamental picket
- Custom

Other Gate Operator Models

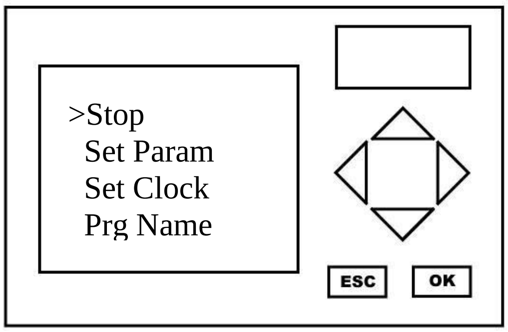
B&B also manufactures the VL series of Vertical Lift gate operators, LXL series slide gate operators, CF series of Correctional Facility gate operators as well as related crash rated barriers and arms, and is continually developing new products.

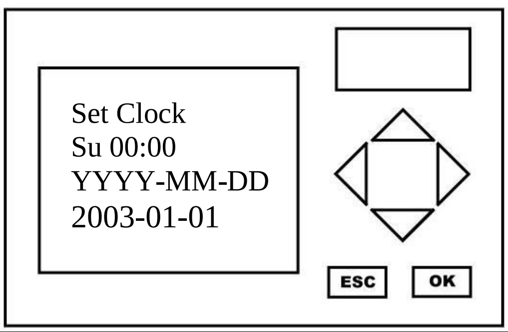
Contact the factory or an authorized representative of B&B for additional information.

4. Setting User Parameters on PLC

10.1

10.2 Setting The Date And Time (optional, not required)

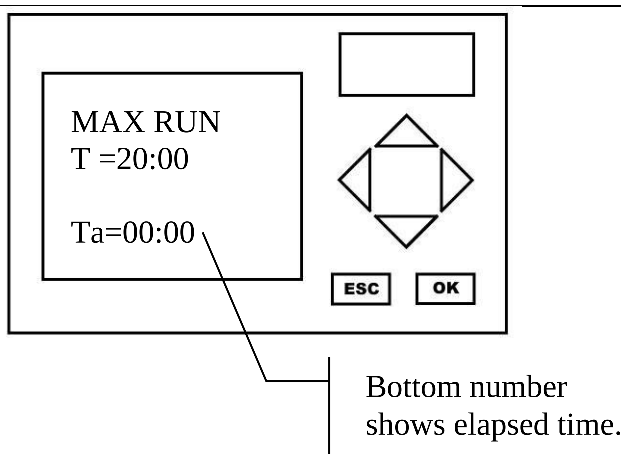




1. Turn power on. Date and time will be flashing. Press the ESC key.
2. This is the main menu. Use the UP and DOWN arrow keys to select ‘Set Clock’, and press the OK button.
3. Press OK again. A cursor flashes under the parameter to be changed.
4. Use the UP and DOWN arrow keys to change the value. Use the LEFT and RIGHT arrow keys to move between lines.
5. Press OK when finished.

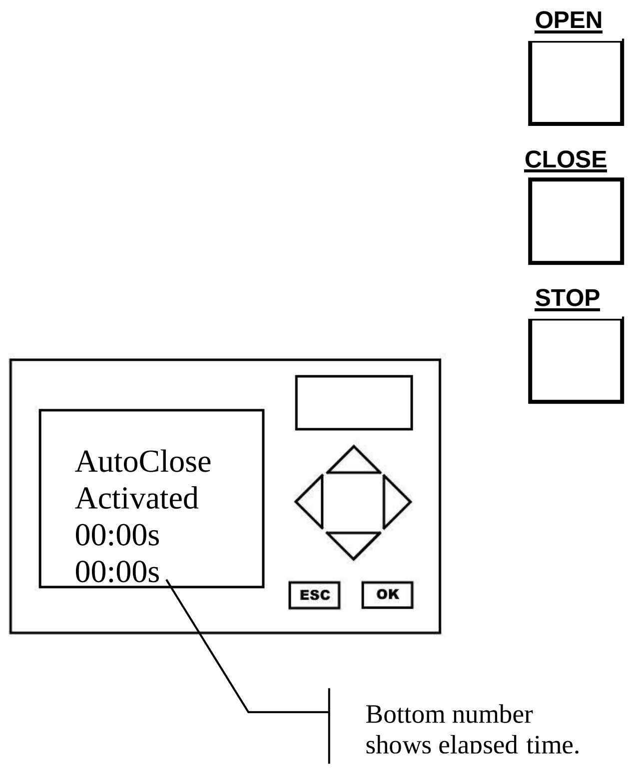
NOTE: *Time format is military time only.

10.3 Setting The Max Run Timer



1. From the main menu, select ‘Set Param’.
2. Use the UP arrow to scroll to the MAX RUN screen and press OK.
3. Press OK again to activate cursor.
4. Use the arrow keys to set the desired time.
5. Press OK to save

10.4 Turning ON / OFF The Timer To Close



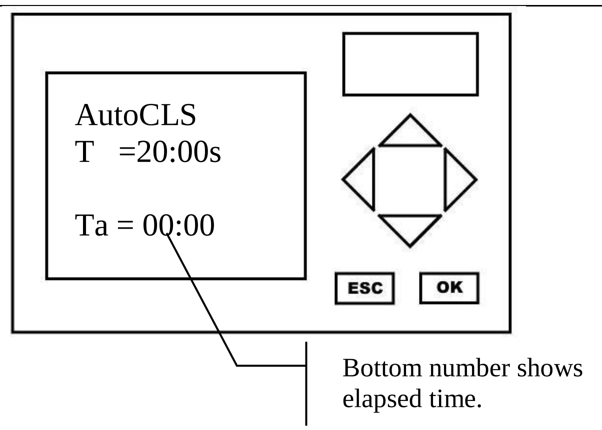
With the unit powered down and the gate in the closed position, locate the supplied 3 button control station and do the following (in order):

1. Press and hold the STOP button
2. While holding the STOP button, press and hold the CLOSE button.
3. While holding the STOP and CLOSE buttons, press and release the OPEN button.
4. Release the CLOSE button, then the STOP button.
5. Trigger the open limit switch. If the timer is on, you will see the screen to the left.
6. Repeat step 1 to toggle the timer off

NOTE: The AutoClose screen will not be visible if the timer is turned off

There is a 3 minute window with which to turn the timer to close on or off each time the operator power is turned on.

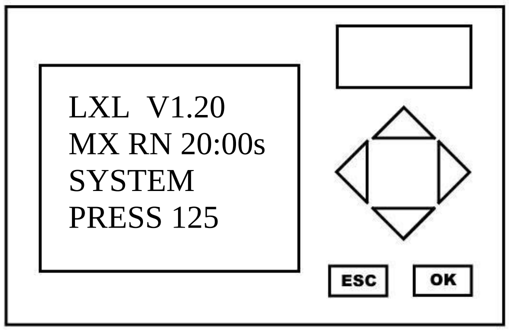
10.5 Setting The Timer To Close

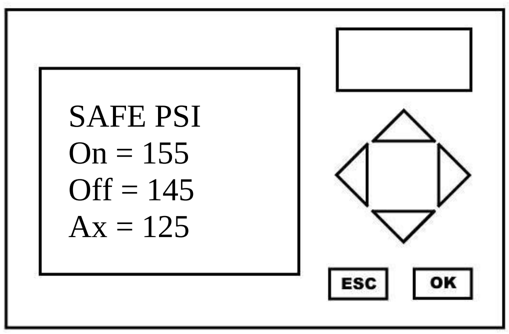


1. From the main menu, select ‘Set Param’.
2. Use the UP arrow to scroll to the AUTO CLS screen and press OK.
3. Press OK again to activate cursor. Use the arrow keys to set the desired time.
4. Press OK to save

Note: s = seconds, m = minutes, h = hours

10.6 Setting The Inherent Safety





1. Press the ESC button to return to the main menu.
2. Open and Close the operator using the 3 button control station. The screen on the left will appear.
3. While the gate is running, pay attention to the SYSTEM PRESS value. This is the amount of pressure required to move the gate.
4. Stop the gate operator and press the ESC button to enter the main menu.
5. Select ‘Set Param’ and use the UP arrow key to scroll to SAFE PSI.
6. Press OK to activate the cursor. Enter the On value (SYSTEM PRESS+30), then the Off value (On-10).
7. Press OK to save and return to the main menu.

5. Initial Operation

10.7 Test Run the Operator

1. Make sure the counterweights are installed.
2. Verify the Yoke is installed
3. Make sure the power switch is ON
4. Hit the Open button on the printed circuit board, or pushbutton control panel.
5. Verify the gate opens to full open. The limit switch should stop the gate automatically, however if the motor is still operating and the gate is fully open, stop the gate by pressing the Stop button on the printed circuit board, pressing Stop pushbutton control panel, or by turning the power switch off.
6. If necessary make any adjustment to the open limit switch.

   NOTE: While the gate is in the up position, the bolts for the bottom side of the gate panel can be installed.

   NOTE: If the primary power is three phase and the motor ran, but the gate did not move to the open position, reverse two poles (swap to wires) of the three phase primary power.

7. Hit the Close button on the printed circuit board or pushbutton control panel

8. Verify the gate closes completely. The limit switch should stop the gate automatically, however if the motor is still operating and the gate is fully closed, stop the gate by pressing the Stop button on the printed circuit board, pressing Stop pushbutton control panel, or by turning the power switch off.
9. If necessary make adjustments to the close limit

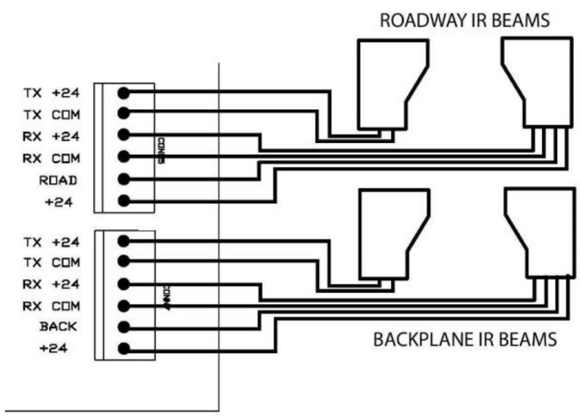
   NOTE: Some air may have become trapped in the hydraulic cylinder and/or lines and may cause the gate panel to "come down hard". With use, this air should eventually be removed by the system. Another cause of the "come down hard" may be the limit switch adjustment.

10. After making adjustments run the gate a couple of time to verify satisfactory operation.
11. You are now ready to install any peripheral/secondary safety devices.

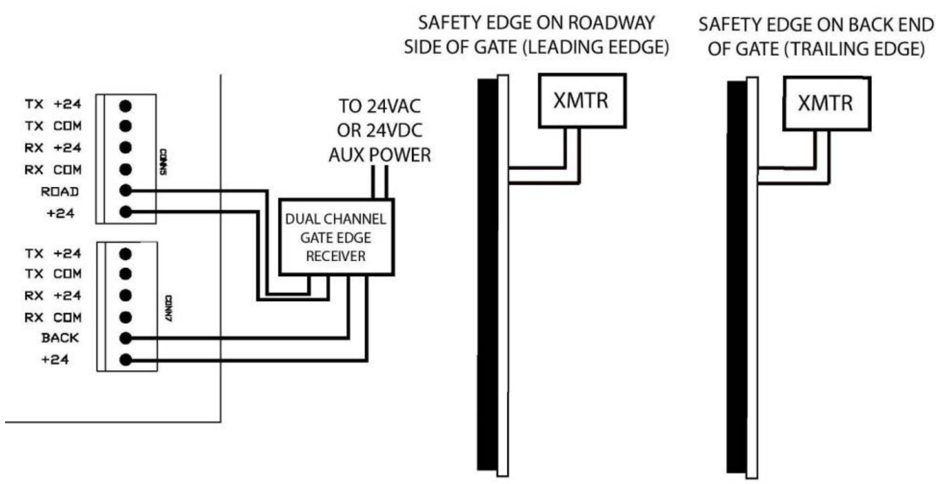
6. Connecting Peripheral Devices

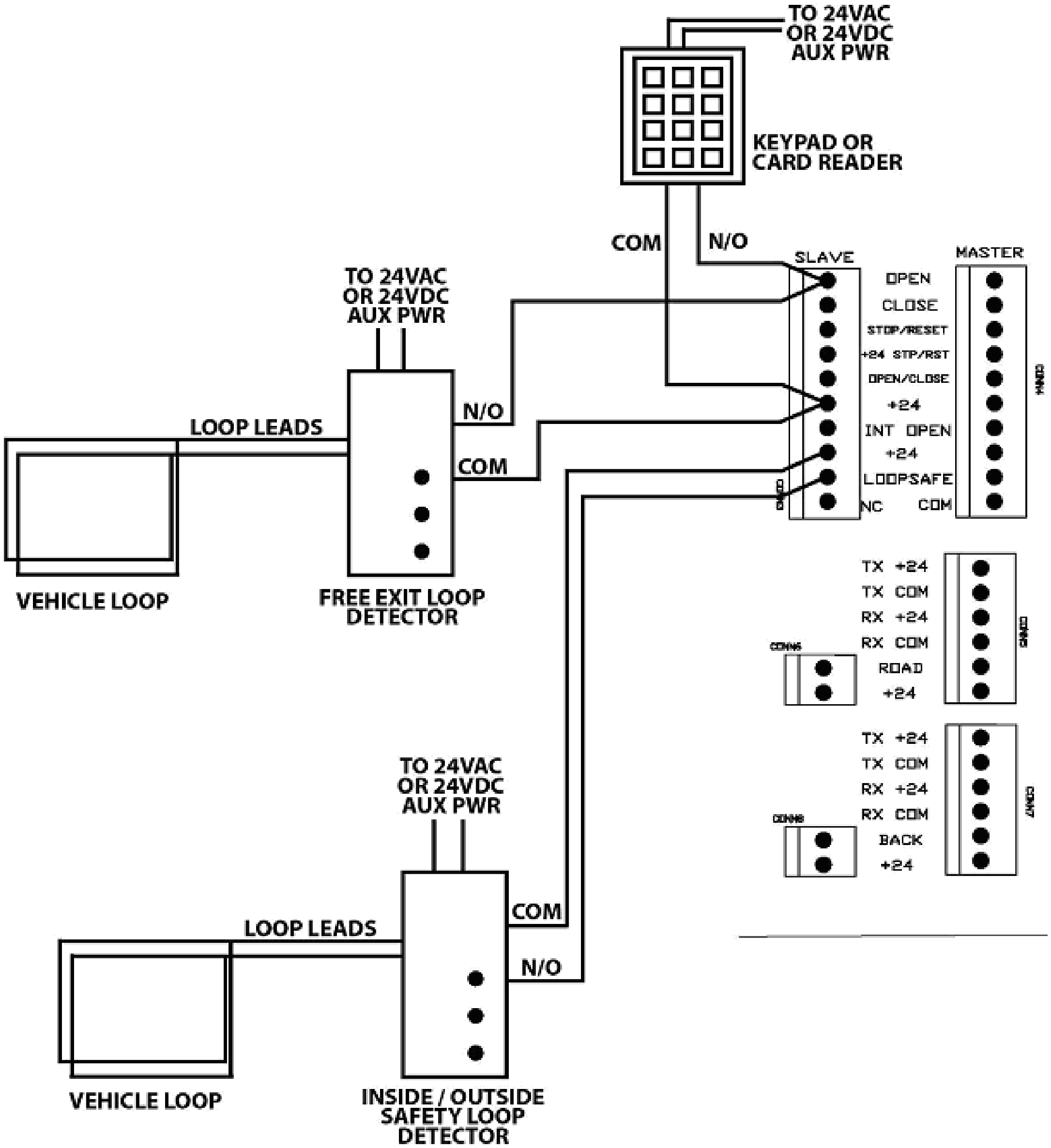
Connecting safety devices to the secondary safety connectors will stop the gate on the detection of the safety and proceed in the event of clearing the safety. To reverse the gate on the event of a safety, you must connect the safety device to the loopsafe terminal on connector 3.

INFRARED BEAMS



SAFETY EDGES





11.1 Test Peripheral/Safety Devices

1. Open the gate
2. Close the gate, and test the installed devices.

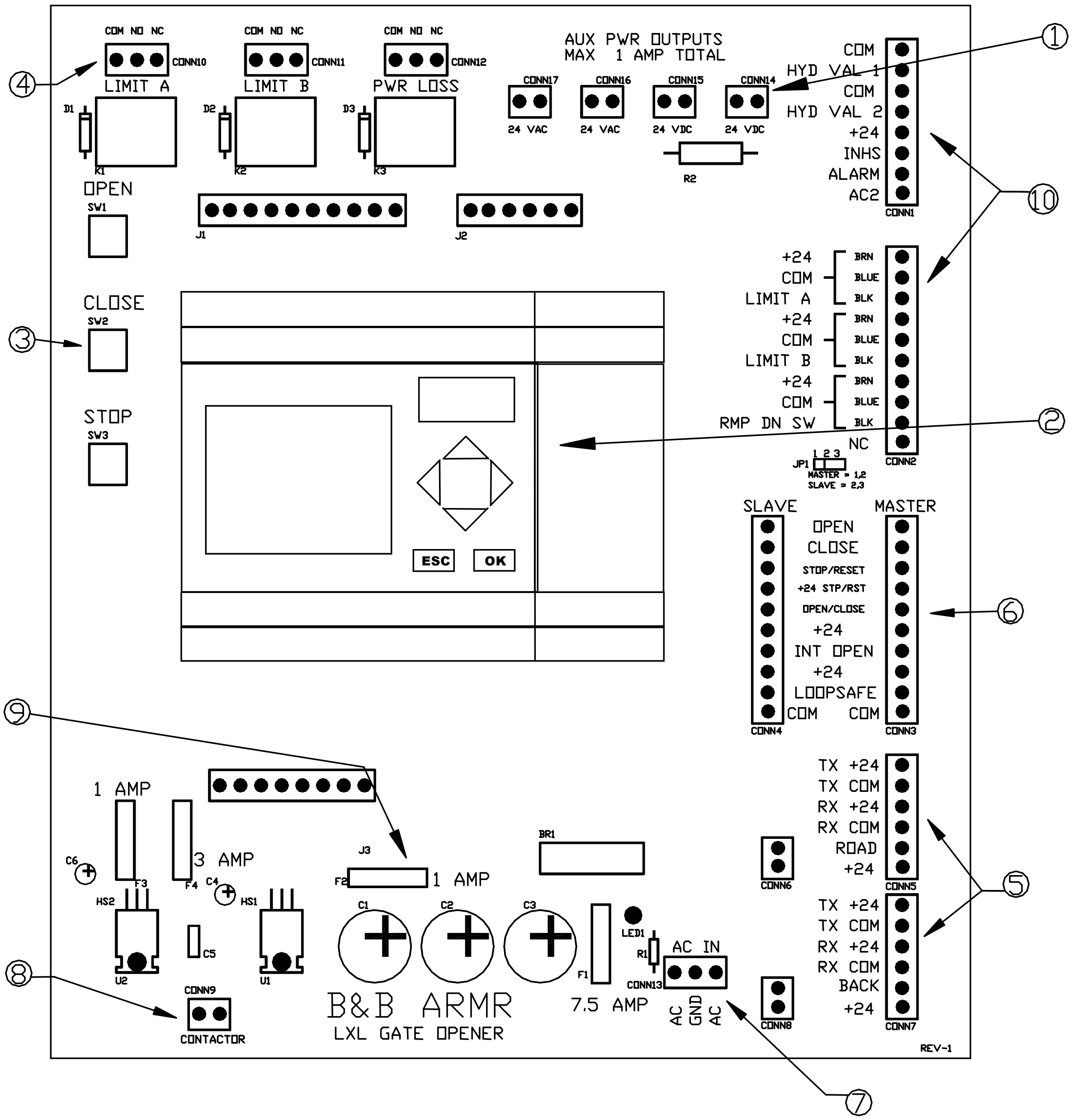
Note: If the safety device is wired in the IR Beam connectors on the printed circuit board (conn 5 and conn 7), the gate will stop the close command until the safety is cleared and then continue to close. If the device is wired to the loopsafe on conn3, the gate will stop and reverse back to the fully open position until the safety is cleared.

2.1 Final Adjustments

With the gate opening and closing properly and the installed safety devices have been tested, you can make adjustment to the operation of the system.

1. Adjusting MaxRun Time. Max run time is the time from which the operator has been given a command to open or close and when the appropriate limit switch is made or a safety is encountered.
    1. Open or Close the gate and time how long it takes to perform the successful operation.
    2. Adjust the MaxRun Time in the Set Parm (section 5). It is recommended that round up in increments of 5 seconds to the next time. Ie. Measured time is 16 seconds, set max run to 20 seconds.
2. Adjust AutoClose time. If you are utilizing adjust the autoclose time to the desired time (section 5)
3. Adjust the Inherent Pressure (section 5)
4. Verify a positive gate stop (the yoke) is installed. It should be located 1 to 2 inches from the end of the gate panel
5. Warning signs should be mounted in a visible location per applicable safety codes instructing personnel and traffic to maintain a safe distance clear of gate path
6. Record the names and phone numbers of the dealer, installer and other important contact is the manual for future reference.
7. Leave the manual along with all supplements with the owner. Have them keep them in a place that is readily available if needed.

7. The Interface Board



1 24VAC/24VDC auxiliary power
2 Processor/Controller
3 Built-in 3 button station
4 Position indication and power loss relays
5 Secondary safety device connections
6 Control inputs (open devices, safety loops, etc.)
7 Input power for control board
8 Contactor output
9 1 amp fuse (processor protection)
10 Factory connections

8. Maintenance

Here is a list of items that should be checked on a routine basis.

- ❑ **Check for loose or broken fasteners -** This check should also include the fasteners on the gate panel. A broken fastener on the gate panel could cause undue stress on the operator. Also, inspect the anchor bolts that hold the gate operator in position. While inspecting these bolts, check for signs the operator has “walked” out of its original mounting position.

- ❑ **Cycle test the operator -** Run the gate through several cycles to confirm that there is no binding of the gate panel and that the drive rail is properly aligned with the gate operator. Also, monitor the wheels for slippage. If the wheels slip, tighten down on the spring adjustment nut until no slippage occurs during normal gate travel. Tighten the spring only enough to eliminate slippage during normal travel.

- ❑ **Remove the vent cap and check the hydraulic fluid level** -The vent cap is located on the reservoir assembly (bottom right of the operator). After removing the vent plug, a visual inspection should show the fluid level approximately 1” below the vent plug. If fluid needs to be added, please contact the factory.

  IMPORTANT NOTE: All B&B ARMR operators ship with Envirologic 132 hydraulic fluid, a biodegradable vegetable based fluid. If another hydraulic fluid is substituted; the existing fluid must be drained to avoid mixing. Never mix hydraulic fluids!

- ❑ **Check for leaks in the hydraulic system -** This includes the hydraulic lines, reservoir and fittings. Leakage may occur in the fittings after a period use. If this happens, moderate tightening of the hose fittings should stop the leakage. If the leak persists, replace the leaking hose assembly. NOTE: It is recommended that the hydraulic fluid be replaced at every 1-2 years if installation is high cycle (>300/day), or every 2-4 years if cycles are < 200/day.

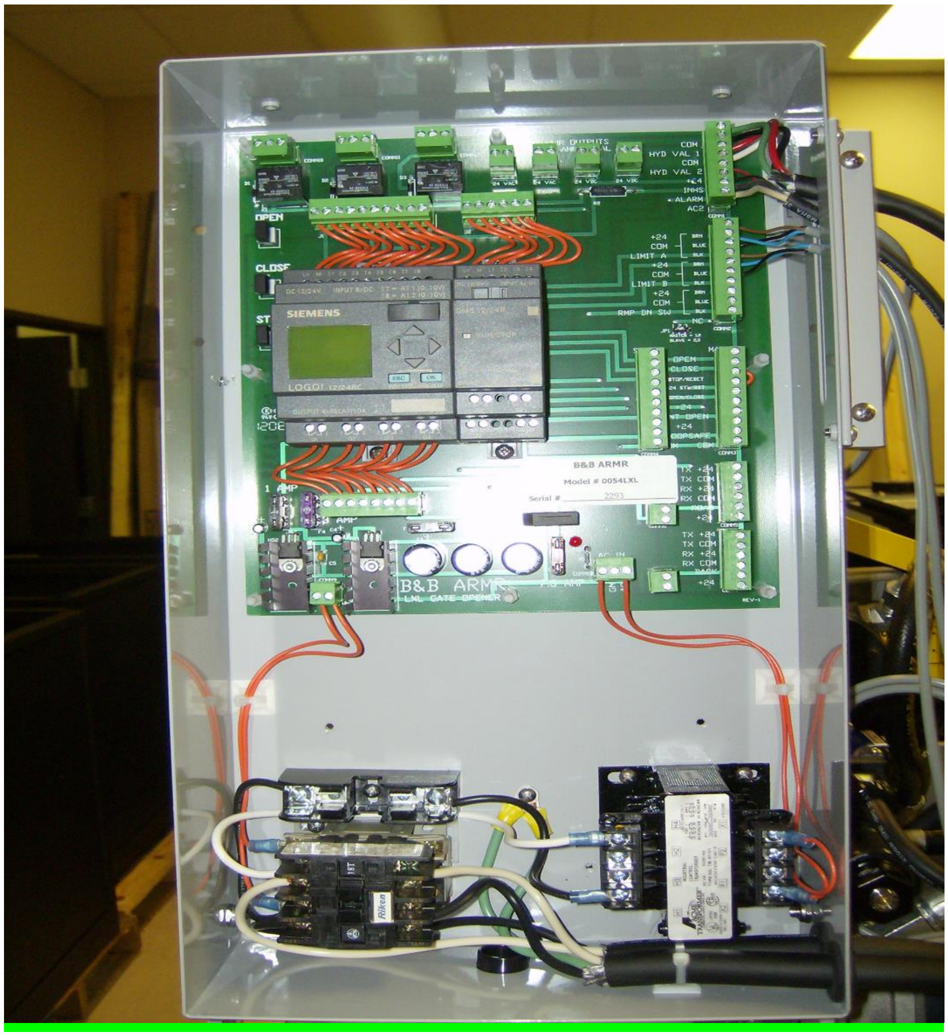
- ❑ **Check for loose or frayed wires -** Carefully inspect all input and output connections to ensure all wires are seated properly in the terminal blocks. A loose or frayed wire can create different “phantom” problems.

- ❑ **Check gate input devices for proper operation -** These devices include push buttons, keypads, loops, etc. An improperly functioning input device could give the impression the gate operator is malfunctioning.

- ❑ **Test all safety devices for proper operation -** Test the inherent safety to ensure the gate reverses after coming in contact with an obstruction. Adjust the parameter if needed.

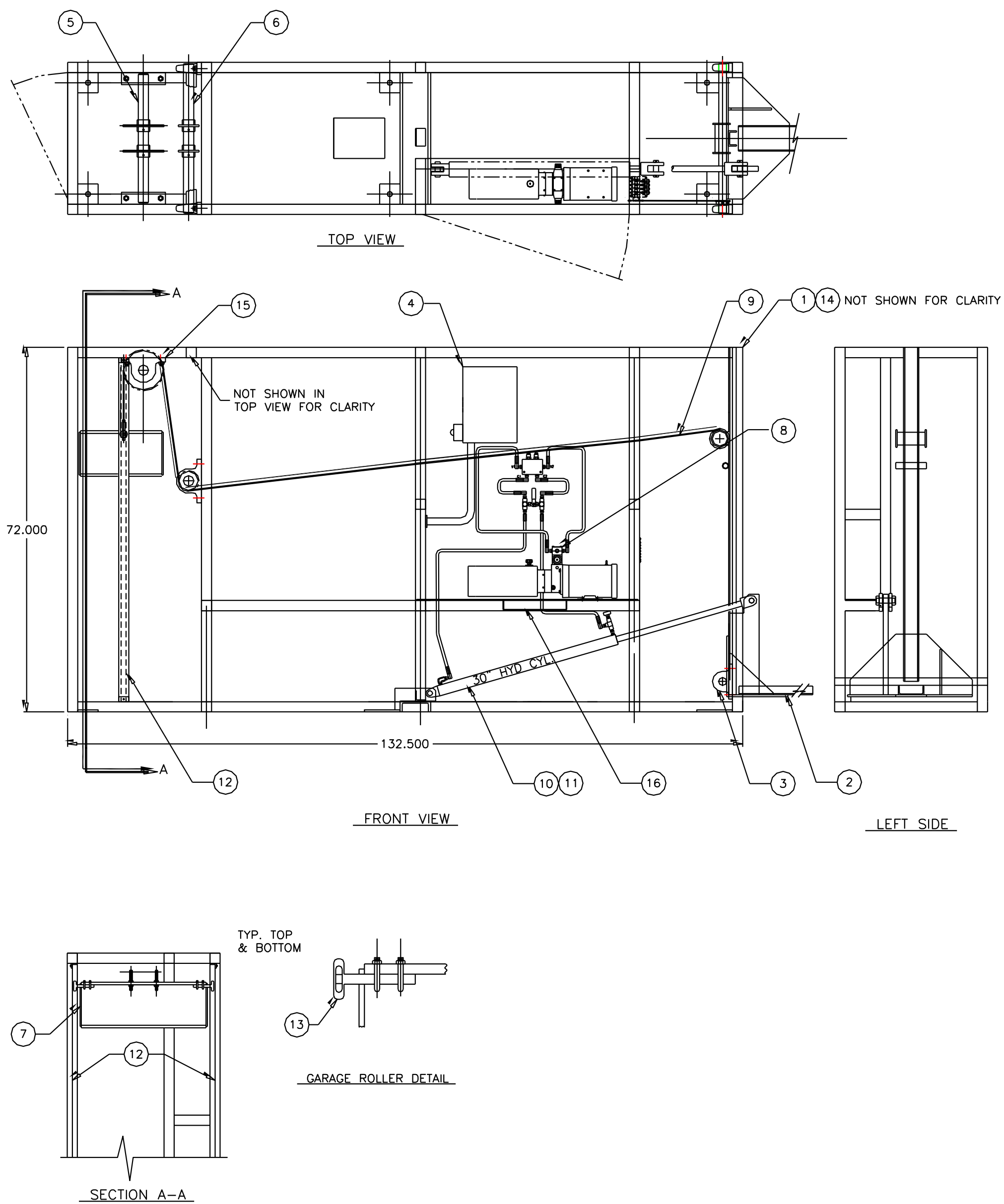
9. Appendix

Note for electrical components such as transformers or motors your voltage and phase may change the part number required



Electrical cubical

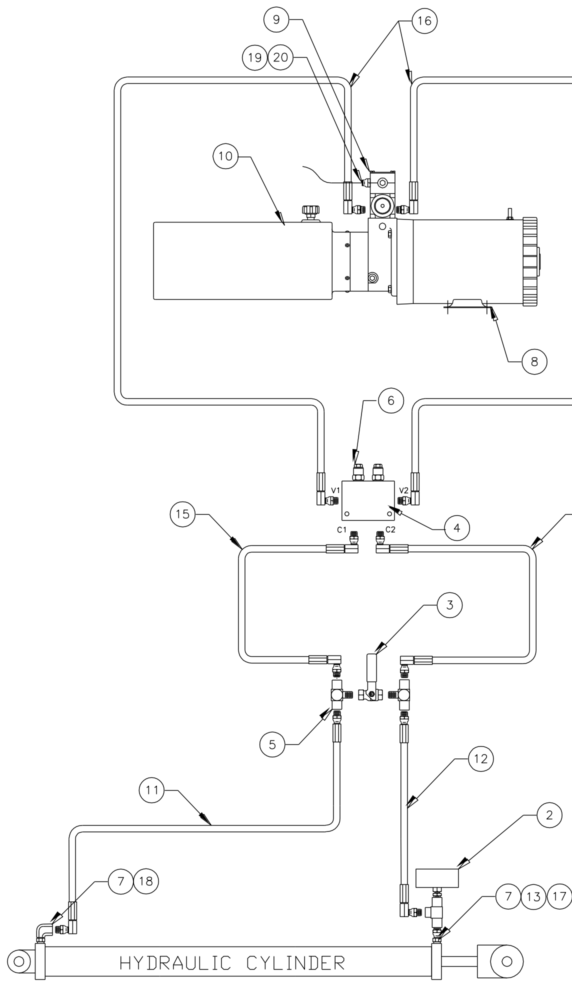
7.1 General Parts Breakdown



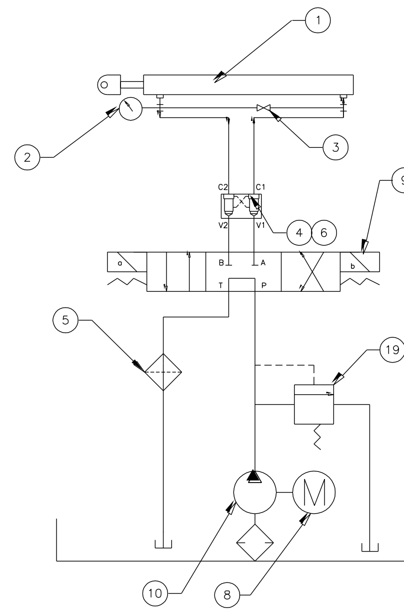
ITEM NO	QTY	PART OR IDENTIFYING NO	DESCRIPTION	DRAWING NUMBER – MATERIAL DESCRIPTION	MATL ALLOC
16	1	0065-0514	DRIP PAN	0065-0514	–
15	4	1701-0200	PILLOW BLOCK BEARING	EA, 2" TYPE UCP211-32	4
14	1	0062-0049	EXTERNAL PANELS	0062-0049	–
13	2	PWH-2.0X4.5SH-WHEEL	GARAGE WHEEL	EA, GARAGE WHEEL	2
12	2	PWH-2.0-VERT-TRACK	GARAGE DOOR CHANNEL	EA, 68.000" LONG	2
11	1	ALS-A005-LH	CYL. & L.S. ASSEMBLY	–	–
10	1	XCYL-252010PP30	HYDRAULIC CYLINDAR	EA, 2" BORE, 30" STROKE	1
9	1	0062-5000	#50 CHAIN	EA, 170" CUT TO FIT	AR
8	1	0062-0559	HYD. ASSEMBLY	0062-0559	–
7	1	0062-0005	CTWT AND BOX ASSY.	0062-0005	–
6	1	0062-0521	LOWER CHAIN SHAFT ASSY.	0062-0521	–
5	1	0062-0520	UPPER CHAIN SHAFT ASSY.	0062-0520	–
4	1	0062-5001-2301	ASSEMBLY, ELECTRIC VP	SEE 0062-5001-XXXX	–
3	2	1701-0108	MB 1-1/2" PILLOW BLOCK	EA, 1.500 PILLOW BLOCK	2
2	1	0062-0007	PIVOT FRAME	0062-0007	–
1	1	0062-0006	STAND FRAME	0062-0006	–

PARTS LIST

NOTES:
1. FOR HYDRUALIC CONNECTIONS SEE DRAWING 0062-0559. ACTUAL HOSE ROUTING MAY VARY.
2. DOORS & OUTERSKIN NOT SHOWN FOR CLARITY
3. ALL NUTS USED FOR MAOUNTING GATE PANEL TO THE PIVOT SHOULD BE ELASTIC STOP NUTS.
4. FOR ELECTRICAL SUBASSEMBLY, SEE DRAWING 0062-5001-XXXX.



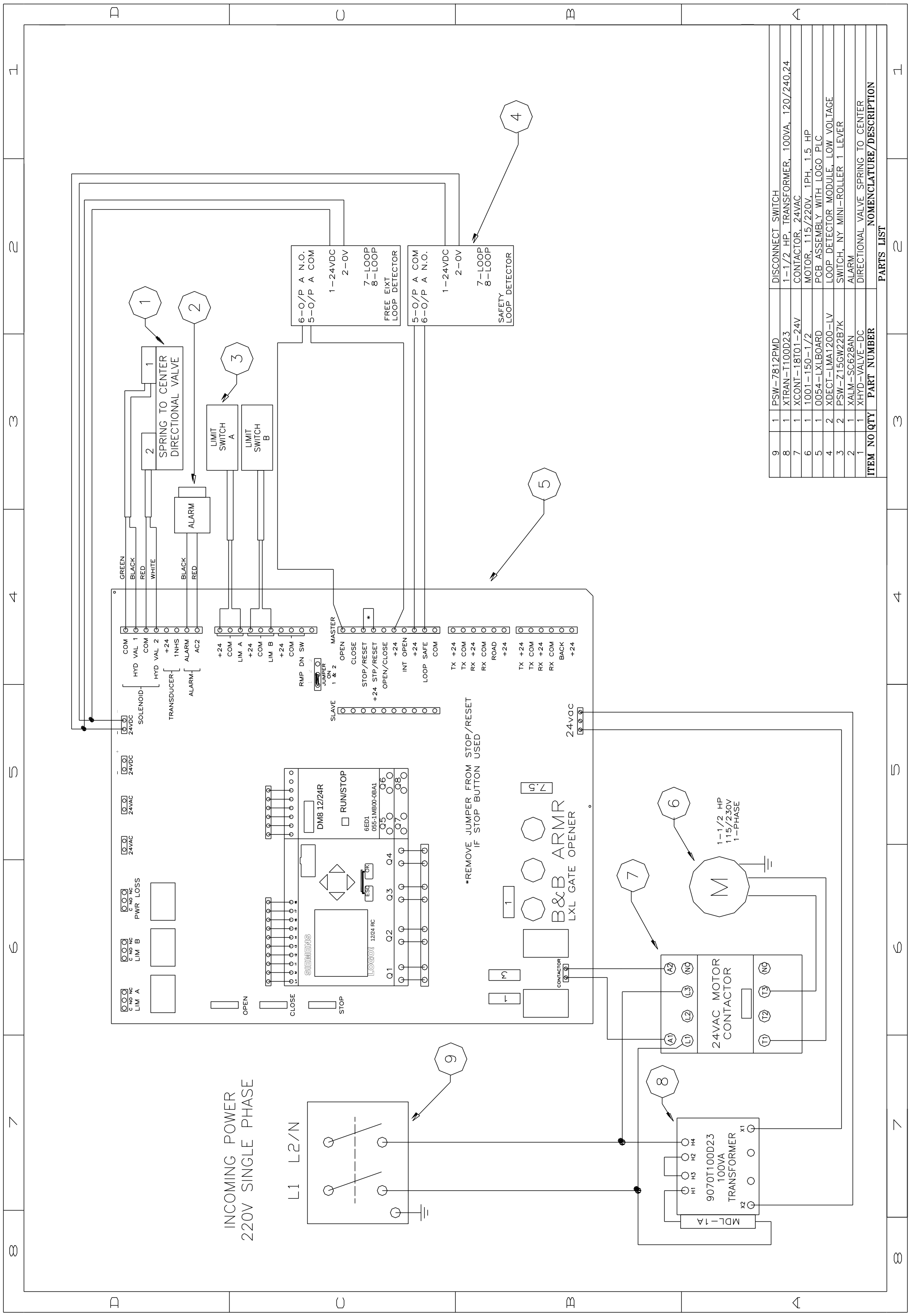
PIPING DETAIL



SCHEMATIC

ITEM NO	QTY	PART NUMBER	NOMENCLATURE/DESCRIPTION
20	1	XFIT-6-1/4AOEG	FITTING, 90 DEG, M6 ORB-F4NPT
19	1	XTRANS-MSP300	TRANSDUCER, PRESSURE W/CABLE
18	1	XFIT-3/8CD-S	FITTING, 90, 3/8NPTM
17	1	XFIT-3/8MRO	FITTING, 3/3FFMNPT TEE
16	2	0065-Z50000-29	HOSE ASSEMBLY, 19IN
15	1	0065-Z50000-30	HOSE ASSEMBLY, 30IN
14	1	0065-Z50000-18	HOSE ASSEMBLY, 18IN
13	1	XFIT-3/8X1/4PTR-S	FITTING, REDUCER 3/8NPT X 1/4NPT
12	1	0062-Z50000-50	HOSE ASSEMBLY, 50IN
11	1	0062-Z50000-96	HOSE ASSEMBLY, 96IN
10	1	XHYD-M406-0105	43 PUMP 2000 PSI 6X6 RES
9	1	XHYD-VALVE-DC	VALVE, SOFT SHIFT, 24 VDC TANDEM
8	1	SEE ELECTRICAL	1-1/2 HP, 3450 RPM, 24VDC
7	2	XFIT-8-3/8F50G	EA, 3/8NPT TO 8ORB
6	2	0063-CBCA-LIN	VALVE, COUNTER BALANCE, CBCA-LIN
5	2	XFIT-3/8-MMS-S	MALE BRANCH TEE
4	1	0063-YEI	MANIFOLD, LINE MOUNT, YEI
3	2	XVALVE-3/8BALLHP	VALVE, BALL, 3/8FNPT, HIGH PRESSURE
2	1	XHYD-GAUGE-1	GAUGE, PRESSURE 0-3000, REAR MT
1	1	XCYL-252010PP30	CYLINDER 30" STROKE, 2" BORE

PARTS LIST


PARTS LIST
ITEM NO QTY PART NUMBER NOMENCLATURE/DESCRIPTION
9 1 PSW-7812PMD DISCONNECT SWITCH
8 1 XTRAN-T100D23 1-1/2 HP TRANSFORMER, 100VA, 120/240,24
7 1 XCONT-18T01-24V CONTACTOR, 24VAC
6 1 1001-150-1/2 MOTOR, 115/220V, 1PH, 1.5 HP
5 1 0054-LXLBOARD PCB ASSEMBLY WITH LOGO PLC
4 2 XDECT-LMA1200-LV LOOP DETECTOR MODULE, LOW VOLTAGE
3 2 PSW-Z15GW22B7K SWITCH, NY MINI-ROLLER 1 LEVER
2 1 XALM-SC628AN ALARM
1 1 XHYD-VALVE-DC DIRECTIONAL VALVE SPRING TO CENTER
SPRING TO CENTER DIRECTIONAL VALVE
ALARM
LIMIT SWITCH A
LIMIT SWITCH B
FREE EXIT LOOP DETECTOR
SAFETY LOOP DETECTOR
B&B ARMR LXL GATE OPENER
*REMOVE JUMPER FROM STOP/RESET IF STOP BUTTON USED
24VAC MOTOR CONTACTOR
1-1/2 HP 115/230V 1-PHASE
9070T100D23 100VA TRANSFORMER
INCOMING POWER 220V SINGLE PHASE
L1 L2/N

1 ? Power Wiring

HP	Voltage Amps	Wire Gage	mm²	Single Operator	Dual Operators
1/2	115 V 7.5 A.AC	12	3.309	80	40
		10	5.261	130	65
		8	8.366	210	105
		6	13.302	340	170
1/2	208 V 3.9 A.AC	12	3.309	290	145
		10	5.261	460	230
		8	8.366	740	370
		6	13.302	1180	590
1/2	230 V 3.7 A.AC	12	3.309	340	170
		10	5.261	540	270
		8	8.366	860	430
		6	13.302	1380	690
1	115 V 12 A.AC	12	3.309	50	25
		10	5.261	80	40
		8	8.366	130	65
		6	13.302	220	110
1	208 V 6.4 A.AC	12	3.309	180	90
		10	5.261	290	145
		8	8.366	470	235
		6	13.302	750	375
1	230 V 6 A.AC	12	3.309	220	110
		10	5.261	350	175
		8	8.366	550	275
		6	13.302	880	440
1 1/2	115 V 15 A.AC	12	3.309	40	20
		10	5.261	70	35
		8	8.366	110	55
		6	13.302	180	90
1 1/2	208 V 8.3 A.AC	12	3.309	140	70
		10	5.261	230	115
		8	8.366	370	185
		6	13.302	580	290
1 1/2	230 V 7.5 A.AC	12	3.309	170	85
		10	5.261	280	140
		8	8.366	450	225
		6	13.302	720	360
2	208 V 13.2 A.AC	12	3.309	90	45
		10	5.261	140	70
		8	8.366	230	115
		6	13.302	370	185
2	230 V 12 A.AC	12	3.309	110	55
		10	5.261	180	90
		8	8.366	280	140
		6	13.302	460	230
3	208 V 18.7 A.AC	12	3.309	60	30
		10	5.261	100	50
		8	8.366	160	80
		6	13.302	260	130
3	230 V 17 A.AC	12	3.309	80	40
		10	5.261	120	60
		8	8.366	200	100
		6	13.302	320	160

3 ? Power Wiring

HP	Voltage Amps	Wire Gage	mm²	Single Operator	Dual Operators
1/2	208 V 2 A.AC	12	3.309	510	255
		10	5.261	820	410
		8	8.366	1310	655
		6	13.302	2080	1040
1/2	230 V 2 A.AC	12	3.309	580	290
		10	5.261	920	460
		8	8.366	1470	735
		6	13.302	2340	1170
1/2	460 V 1 A.AC	12	3.309	2330	1165
		10	5.261	3700	1850
		8	8.366	5900	2950
		6	13.302	9390	4695
1	208 V 3.5 A.AC	12	3.309	320	160
		10	5.261	510	255
		8	8.366	810	405
		6	13.302	1290	645
1	230 V 3.2 A.AC	12	3.309	390	195
		10	5.261	620	310
		8	8.366	980	490
		6	13.302	1570	785
1	460 V 1.6 A.AC	12	3.309	1560	780
		10	5.261	2480	1240
		8	8.366	3950	1975
		6	13.302	6290	3145
1 1/2	208 V 6.2 A.AC	12	3.309	190	95
		10	5.261	300	150
		8	8.366	480	240
		6	13.302	770	385
1 1/2	230 V 5.6 A.AC	12	3.309	230	115
		10	5.261	370	185
		8	8.366	590	295
		6	13.302	940	470
1 1/2	460 V 2.8 A.AC	12	3.309	940	470
		10	5.261	1490	745
		8	8.366	2380	1190
		6	13.302	3790	1895
2	208 V 6.2 A.AC	12	3.309	90	45
		10	5.261	140	70
		8	8.366	230	115
		6	13.302	370	185
2	230 V 5.6 A.AC	12	3.309	110	55
		10	5.261	180	90
		8	8.366	280	140
		6	13.302	460	230
2	460 V 2.8 A.AC	12	3.309	150	75
		10	5.261	230	115
		8	8.366	370	185
		6	13.302	600	300

3 ? Power Wiring (Continued)

HP	Voltage Amps	Wire Gage	mm²	Single Operator	Dual Operators
3	208 V 7.8 A.AC	12	3.309	150	75
		10	5.261	240	120
		8	8.366	390	195
		6	13.302	620	310
3	230 V 7.4 A.AC	12	3.309	180	90
		10	5.261	280	140
		8	8.366	450	225
		6	13.302	730	365
3	460 V 3.7 A.AC	12	3.309	720	360
		10	5.261	1150	575
		8	8.366	1830	915
		6	13.302	2920	1460
5	208 V 15 A.AC	12	3.309	90	45
		10	5.261	140	70
		8	8.366	230	115
		6	13.302	370	185
5	230 V 13.2 A.AC	12	3.309	110	55
		10	5.261	180	90
		8	8.366	280	140
		6	13.302	460	230
5	460 V 6.6 A.AC	12	3.309	150	75
		10	5.261	230	115
		8	8.366	370	185
		6	13.302	600	300

Control Wiring

Voltage	Wire Gage	mm²	Max Distance (ft)	Voltage Drop
24 V	28	0.081	450	6V
24 V	26	0.129	710	6V
24 V	24	0.205	1140	6V
24 V	20	0.518	2890	6V
24 V	18	0.823	4600	6V

Notes

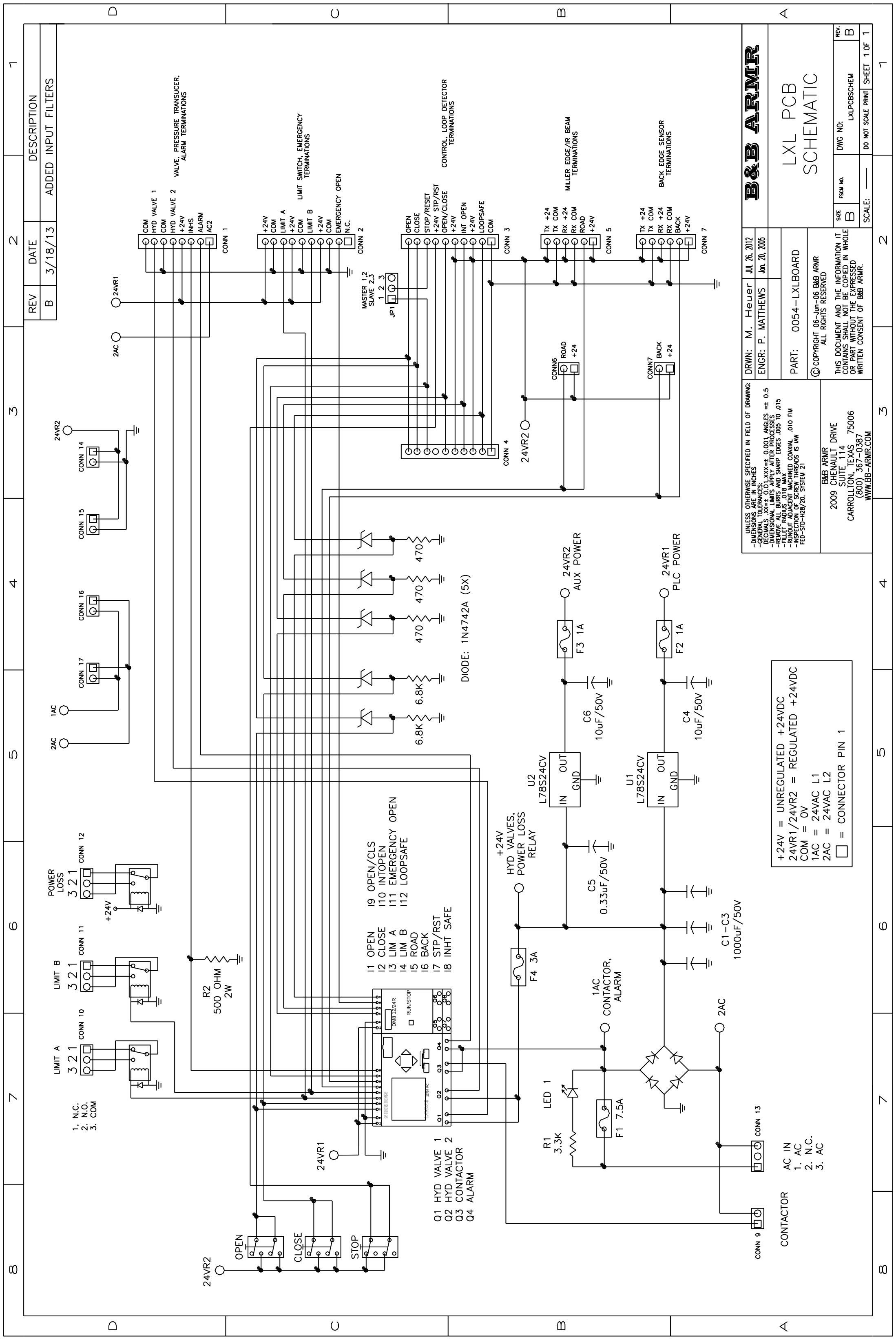
1	Maximum distance is measured from Power Source to Operator
2	Maximum distance for controls is measured from Operator to Pushbutton or Other device
3	If distance to power Source is greater than value shown use a higher voltage or three phase unit or contact utility company for a service feeder
4	If distance to Remote Control device is greater than 2000ft use a range extender device.
5	Power Tabels are based on stranded copper wires and allows up to 2% voltage drop
6	Control Table is based on stranded copper wires and allows up to 25% Connect Power per local codes
7	Connect Power per local codes
8	Run Power and Control wiring seperately
9	Ampere rating is motor full load; Startup up current may be higher
10	100 VA Allowed for Controls & Heater
11	Wires sizes and resisatnce is from Mogami.
12	0.1 Amps for control current, these may well vary for different models

Battery Backup Input (1 ?)

HP	Voltage Amps	Wire Gage	mm²	Single Operator	Dual Operators
0.4	115 V 4.6 A.AC 22.04 A.DC	12	3.309	120	60
		10	5.261	200	100
		8	8.366	320	160
		6	13.302	520	260
0.4	208 V 2.5 A.AC 21.67 A.DC	12	3.309	430	215
		10	5.261	680	340
		8	8.366	1090	545
		6	13.302	1730	865
0.4	230 V 2.3 A.AC 22.04 A.DC	12	3.309	510	255
		10	5.261	820	410
		8	8.366	1310	655
		6	13.302	2090	1045
0.75	115 V 6.9 A.AC 33.06 A.DC	12	3.309	90	45
		10	5.261	140	70
		8	8.366	230	115
		6	13.302	360	180
0.75	208 V 3.8 A.AC 32.93 A.DC	12	3.309	290	145
		10	5.261	470	235
		8	8.366	750	375
		6	13.302	1200	600
0.75	230 V 3.4 A.AC 32.58 A.DC	12	3.309	370	185
		10	5.261	580	290
		8	8.366	930	465
		6	13.302	1490	745
1.3	115 V 13 A.AC 62.29 A.DC	12	3.309	50	25
		10	5.261	80	40
		8	8.366	120	60
		6	13.302	200	100
1.3	208 V 7.2 A.AC 62.40 A.DC	12	3.309	160	80
		10	5.261	260	130
		8	8.366	420	210
		6	13.302	670	335
1.3	230 V 6.7 A.AC 64.21 A.DC	12	3.309	190	95
		10	5.261	310	155
		8	8.366	500	250
		6	13.302	800	400

AWG Stranded Wire Resistance

Size AWG	Size mm²	Diameter mm	R @ 77ºF Ohms /1000'
28	0.081	14.6	66.14
26	0.129	0.468	41.76
24	0.205	0.59	26.18
22	0.326	0.744	16.46
20	0.518	0.938	10.36
18	0.823	1.182	6.52
16	1.309	1.491	4.08
14	2.081	1.88	2.58
12	3.309	2.371	1.62
10	5.261	2.989	1.02
8	8.366	3.77	0.64
6	13.3	4.753	0.402


B&B ARMR
LXL PCB SCHEMATIC
REV B 3/18/13 ADDED INPUT FILTERS
DRWN: M. Heuer
ENGR: P. MATTHEWS
PART: 0054-LXLBOARD
DWG NO: LXLPCBSCHEM
SHEET 1 OF 1
DIODE: 1N4742A (5X)
+24V = UNREGULATED +24VDC
24VR1/24VR2 = REGULATED +24VDC
COM = 0V
1AC = 24VAC L1
2AC = 24VAC L2
= CONNECTOR PIN 1
I1 OPEN
I2 CLOSE
I3 LIM A
I4 LIM B
I5 ROAD
I6 BACK
I7 STP/RST
I8 INHT SAFE
I9 OPEN/CLS
I10 INTOPEN
I11 EMERGENCY OPEN
I12 LOOPSAFE
Q1 HYD VALVE 1
Q2 HYD VALVE 2
Q3 CONTACTOR
Q4 ALARM
B&B ARMR
2009 CHENAULT DRIVE
SUITE 114
CARROLLTON, TEXAS 75006
(800) 367-0387
WWW.BB-ARMR.COM

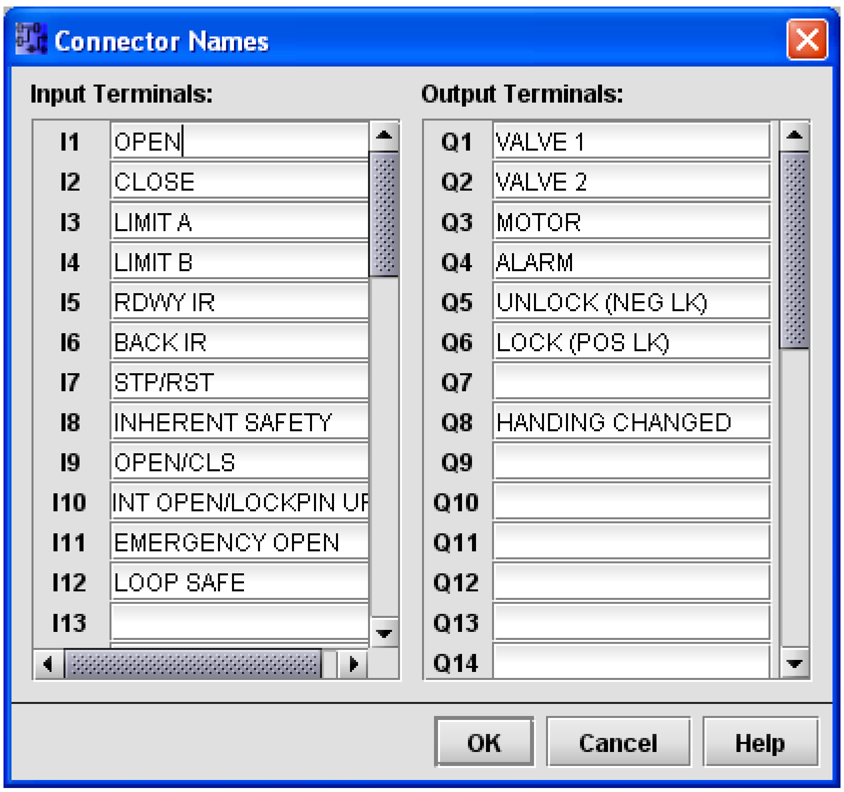
10. Troubleshooting

The table below provides a general guidance on identifying and correcting any problems with your VP Series gate operator. If you encounter problems that you cannot fix, contact B&B ARMR and we will gladly work with you to correct them.

7.2 Alarm Definitions –

Continuous solid beep – Gate is moving or a Stop command is active
5sec On, 1sec Off – MaxRun Time Error
1sec On, 1sec Off – Forward and/or Reverse Safety
0.25sec On, 0.5sec Off – Inherent Safety Error

7.3 PLC Input/Output Definitions –



Symptom	Actions
Gate operator does not respond when commanded.	1. Check CONN 9 for power when command is given. 2. Check overload protector 3. Check PLC output. 4. Check that safeties are clear, and that IR Beams are aligned. 5. Check PLC input. 6. Check the +24VDC at CONN3 pins 8 and 10
Operator drives gate too slowly.	1. Check for any binding of the gate. 2. Check the fluid level in the reservoir. 3. Check the quality of the hydraulic fluid. Old fluid will become sludgy and clogging of internal filter is possible.
MAX Runtime Error	1. Check for any binding of the gate. 2. Check the fluid level in the reservoir. 3. Check the MAX RUN TIME setting in Parameters to insure sufficient time is set for the gate size.
Date and time flash on the PLC.	1. Refer to step 4.11 of Installing and Programming the LXL Operator for setting the date and time. (Optional, not required to be set)
Gate does not stop automatically when encountering an obstacle.	1. Refer to step 4.15 of Installing and Programming the LXL Operator for setting the Inherent Safety. 2. Check for system pressure on Inherent Safety screen of the PLC, if no reading is evident while gate is running suspect a faulty pressure transducer. 3. Check the functionality of the safety devices. 4. Check safety device wiring, refer to sections 6 and/or 8
Fuses are blowing.	1. Check for incorrect incoming power to the Printed Circuit Board (PCB). 2. Ensure all external devices are sending the correct voltage to the PCB, and that there are no shorts.
PLC says Stop/Reset activated.	1. If using an external push button, ensure that the stop button is a normally closed contact. 2. If not using an external push button, ensure there is a jumper wire between stop/reset and +24 stp/rst on CONN 3. 3. Check the connection of the wire between the J1Pin 9 connector and I7 of the PLC. 4. Verify shunt is present on JP1 between pins 1 and 2. 5. Check F3.
Electric Motor turns but gate does not move.	1. Check the fluid level in the reservoir. 2. Check PLC outputs to see if Q1 turns on for an OPEN and/or Q2 turns on for a CLOSE. 3. Check for loose coupling between the electric motor and pump assembly. 4. Check for voltage between COM and HYD VAL 1 and 2 on CONN 1 of PCB, and ensure wires connections are tight.

Symptom	Actions
	5. If voltage is correct, manually shift the detent in the center of the solenoid on either side of the hydraulic valve, if wheels move suspect hydraulic valve. 6. If unit is a 3 phase unit and a new installation, reverse two of the incoming power leads.

Equipment Maintenance Log Form

Product Type:____________________
Location:_________________________

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		

	Date	Performed By	Checklist Complete	Anomalies	Notes
Jan			Yes No		
Feb			Yes No		
Mar			Yes No		
Apr			Yes No		
May			Yes No		
Jun			Yes No		
Jul			Yes No		
Aug			Yes No		
Sep			Yes No		
Oct			Yes No		
Nov			Yes No		
Year			Yes No		

11. Warranty Information

B&B-ARMR warranties for a period of five (5) years, after delivery F.O.B. plant, unless otherwise specified by Supplier, from failure of operation in ordinary use and against defects due to faulty material or workmanship. Any defective equipment in the Barrier shall be returned to the factory, at Supplier's option, for repair or replacement, and Supplier assumes no responsibility for service at any consumer site. Supplier is in no event responsible for any labor costs under the warranty. Subject to the above limitation, all service, parts, and replacements necessary to maintain the equipment as warranted shall be furnished by the end user. Supplier shall not have any liability under these specifications, other than for repair or replacement as described above for equipment malfunction or equipment failure of any kind, caused for any reason, including, but not limited to unauthorized repairs, improper installation, installation not performed by Supplier personnel, nor by Supplier authorized personnel, failure to perform manufacturer's suggested routine maintenance, modifications, misuse, accident, catastrophe, neglect, natural disaster, act of God or if at any time the power supplied to any part of the Security Barrier falls short or exceeds the rate of tolerance for the equipment.

Replacement parts shipped from B&B ARMR, are warranted for 90 days after shipment. Replacement parts are subject to the same warranty terms as stated above.

Drive wheels are considered normal wear parts and are not covered under this warranty except in cases of manufacturer defects.

The exclusive remedy for breach of any warranty by Supplier shall be the repair or replacement at supplier's option, of any defects in the equipment. IN NO EVENT SHALL THE SUPPLIER OF SECURITY BARRIER BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES OR ANY KIND OF DAMAGES TO ANYONE. Except as provided herein, Supplier makes no warranties or representations to consumer or to anyone else and consumer hereby waives all liability against Supplier as well as any other person for the design, manufacture, sale, installation, and/or servicing of the Security Barrier.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO OTHER WARRANTIES EXIST.

Any modification or alteration by anyone other than B&B-ARMR will render the warranty herein as null and void.